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EXAMINER	
HENSON, MISCHITA L	

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NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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ADVISORY ACTION

Response to Arguments

1. Applicant's arguments filed March 30, 2010 have been fully considered but they are not persuasive. Applicant argues:

Claims 1-3, 7-9, 13-18, 22-24, and 28-30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over US Patent 6,904,366 to Patzek et al. ("Patzek"), in view of Engler et al. in NPL "Analysis of pressure and pressure derivative without type curve matching, 4. Naturally fractured reservoirs" ("Engler"). Applicants respectfully disagree. In particular, the combination of Patzek and Engler fails to teach or suggest at least "injecting an injection fluid into the formation at an injection pressure exceeding the formation fracture pressure," as recited by independent claims 1, 15, and 28. In contrast, Patzek teaches away from injecting at pressure exceeding the formation fracture pressure. For example, Patzek states that "A purpose contemplated by the instant invention is preventing and controlling otherwise uncontrollable growth of injection hydrofractures and unrecoverable damage of reservoir rock formations by the excessive or otherwise inappropriate fluid injection." Col. 6, 11. 46-50. In other words, Patzek seeks to avoid hydrofractures caused by excessive fluid injection. Patzek reiterates the point, stating: "An injection rate or pressure that is too high may dramatically increase the fracture growth rate and eventually leads to a catastrophic fracture extension and unrecoverable water channeling between an injector and a producer. In order to avoid fatal reservoir damage, smart injection controllers should be deployed, as developed in this invention." Col. 8, 11.59-65. Further, the Patzek passage noted in the Final Office Action points out that "[w]hen excess injector pressure is used, the geological strata (or layer) containing the oil can be crushed (or hydrofractured). The growth of such hydrofractures can cause a direct conduit from an injector to a producer, whereby no further oil is produced, and water is simply pumped in the injector, conducted through the hydrofractured conduit, and recovered at the producer through a process known as 'channeling.' At this juncture, the injector is no longer useful in its function, and is now known as a failed, dead, or lost well." Col. 1, 11.46-55. In other words, when "excess" pressure is used, the injector is not useful for its intended purpose. Thus, Applicants assert that Patzek fails to disclose "injecting an injection fluid into the formation at an injection pressure exceeding the formation fracture pressure," because Patzek indicates that injecting at such "excess" pressure should be prevented to avoid unrecoverable, fatal damage to the reservoir. Moreover, Engler fails to obviate the deficiencies of Patzek. Accordingly, the combination of Patzek and Engler fails to establish that every limitation of independent claims 1, 15, and 28 was known in the prior art.
Therefore, Applicants respectfully assert that independent claims 1, 15, and 28 and their dependent claims are not rendered obvious by the combination of Patzek and Engler. Accordingly, Applicants respectfully request withdrawal of this rejection with respect to claims 1-3, 7-9, 13-18, 22-24, and 28-30.

In response to Applicant's assertion that Patzek et al. teaches away, it has been held that disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In re Susi, 440 F.2d 442, 169 USPQ 423 (CCPA 1971).

Patzek et al. teaches "a system of wells ***injecting water or other fluids***...When

excess injector pressure is used, the geological strata (or layer) containing the oil can be crushed (or hydrofractured)..." (emphasis added, see "injecting water or other fluids", column 1 lines 32-34; see also "excess injector pressure is used..." (i.e. exceeding the formation fracture pressure), column 1 lines 45-50; see also water injection, column 5 lines 28-33); Examiner interprets "injecting water or other fluids" to be "injecting an injection fluid into the formation" and "excess injector pressure is used" to be "pressure exceeding the formation fracture pressure" and therefore, as the claims are presented, Patzek et al. teaches the claimed limitation "injecting an injection fluid into the formation at an injection pressure exceeding the formation fracture pressure". Without concurrence with Applicant's assertion that "the Carter's model has been transformed into an equivalent simpler form", The Examiner notes that the Carter's model admits "variable injection pressure" and therefore when the model is transformed the "variable injection pressure" would inherently be transformed thus Patzek et al. teaches "transforming the pressure measurement data into a constant rate equivalent pressure".

Patzek et al. was not relied upon to teach "detecting the presence of a dual unit-slope wellbore storage in the transformed pressure measurement data, said dual unit-slope being indicative of the presence of a fracture retaining residual width".

Applicant's specification discloses "Figure 3 is a first *log-log graph* of the transformed fracture injection/falloff test shut-in pressure data, such as *adjusted pressure and adjusted pressure derivative, showing a dual unit slope wellbore* storage and indicating a fracture retaining residual width" (emphasis added, [0029] and Fig. 3). As stated above, Engler et al. teaches direct synthesis for interpreting pressure

transient tests in naturally fractured reservoirs that includes the effect of the wellbore storage (Abstract). Further, Engler et al. teaches "the method combines the characteristic points and slopes from ***a log-log plot of pressure and pressure derivative data with the exact***, analytically solution to obtain reservoir properties. It has been successfully applied to…homogenous reservoirs with skin and ***wellbore storage***…vertically fractured wells…" (emphasis added, i.e. detecting the presence of a dual unit-slope wellbore storage in the transformed pressure measurement data, said dual unit-slope being indicative of the presence of a fracture retaining residual width, Background par. 4, see Step-by-step procedures *Step 3*, *Step 8* and *Solution* par. 1, and ***Fig. 10***). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Engler et al. with Patzek et al. because Engler et al. teaches the direct synthesis method that offers consistent and accurate results from pressure tests with or without all reservoir flow regimes (Abstract), thereby improving the accuracy and reliability of the system.

Therefore, the Examiner maintains that the combination of Patzek et al. and Engler suggests or renders obvious the limitations of independent claims 1,15 and 28.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "variable storage can occur") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant argues:

Claims 10, 12, 25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patzek and Engler in view of Espinosa-Paredes et al. in NPL "Estimation of static formation temperatures in geothermal wells" ("Espinosa-Paredes"). Applicants respectfully disagree. As indicated above, Patzek and Engler fail to teach or suggest "injecting an injection fluid into the formation at an injection pressure exceeding the formation fracture pressure," as recited by independent claims 1 and 15. Moreover, Espinosa-Paredes fails to obviate the deficiencies of Patzek and Engler. Accordingly, the combination of Patzek, Engler, and Espinosa-Paredes fails to establish that every limitation of independent claims 10 and 15 was known in the prior art.
Therefore, Applicants respectfully assert that independent claims 1 and 15 and their dependent claims 10, 12, 25, and 27 are not rendered obvious by the combination of Patzek, Engler, and Espinosa-Paredes. Accordingly, Applicants respectfully request withdrawal of this rejection with respect to claims 10, 12, 25, and 27.

Initially, it is noted that Applicant inadvertently refers to claim 10 as an independent claim (see Applicant's statement "fails to establish that every limitation of independent claims 10 and 15", above. Examiner interprets that statement to be a typographical error and that Applicant intended for the reference to be to independent claim 1.

Patzek et al. teaches "a system of wells ***injecting water or other fluids***...When ***excess injector pressure is used***, the geological strata (or layer) containing the oil can be crushed (or hydrofractured)..." (emphasis added, see "injecting water or other fluids", column 1 lines 32-34; see also "excess injector pressure is used..." (i.e. exceeding the formation fracture pressure), column 1 lines 45-50; see also water injection, column 5 lines 28-33); Examiner interprets "injecting water or other fluids" to be "injecting an injection fluid into the formation" and "excess injector pressure is used" to be "pressure exceeding the formation fracture pressure" and therefore, as the claims are presented, Patzek et al. teaches the claimed limitation "injecting an injection fluid into the formation at an injection pressure exceeding the formation fracture pressure". Without

concurrence with Applicant's assertion that "the Carter's model has been transformed into an equivalent simpler form", The Examiner notes that the Carter's model admits "variable injection pressure" and therefore when the model is transformed the "variable injection pressure" would inherently be transformed thus Patzek et al. teaches "transforming the pressure measurement data into a constant rate equivalent pressure".

Applicant's specification discloses "Figure 3 is a first *log-log graph* of the transformed fracture injection/falloff test shut-in pressure data, such as *adjusted pressure and adjusted pressure derivative, showing a dual unit slope wellbore* storage and indicating a fracture retaining residual width" (emphasis added, [0029] and Fig. 3). As stated above, Engler et al. teaches direct synthesis for interpreting pressure transient tests in naturally fractured reservoirs that includes the effect of the wellbore storage (Abstract). Further, Engler et al. teaches "the method combines the characteristic points and slopes from ***a log-log plot of pressure and pressure derivative data with the exact***, analytically solution to obtain reservoir properties. It has been successfully applied to...homogenous reservoirs with skin and ***wellbore storage***...vertically fractured wells..." (emphasis added, i.e. detecting the presence of a dual unit-slope wellbore storage in the transformed pressure measurement data, said dual unit-slope being indicative of the presence of a fracture retaining residual width, Background par. 4, see Step-by-step procedures *Step 3, Step 8* and *Solution* par. 1, and ***Fig. 10***). Therefore, the Examiner maintains that the combination of Patzek et al. and Engler suggests or renders obvious the limitations of independent claims 1 and 15.

Conclusion

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mi'schita' Henson whose telephone number is (571) 270-3944. The examiner can normally be reached on Monday - Thursday 7:30 a.m. - 4:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eliseo Ramos-Feliciano can be reached on (571) 272-7925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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4/12/10
/Mi'schita' Henson/
Examiner, Art Unit 2857

/Carol S Tsai/
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